

Public Health Watch



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METROPOLITAN HEALTH DEPARTMENT OF NASHVILLE AND DAVIDSON COUNTY, TENNESSEE

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Editor's Note:

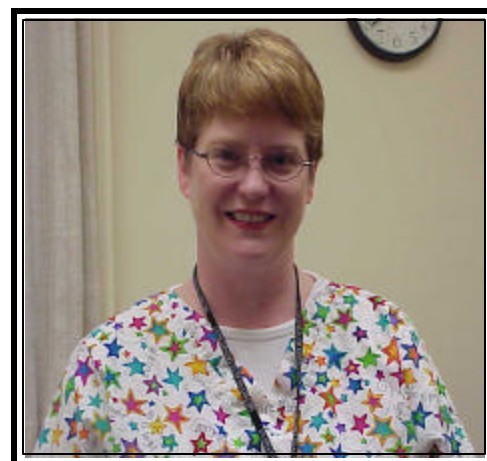
In an effort to keep our readers up to date on the most current information regarding bioterrorism, *Public Health Watch* plans to offer a series of articles dealing with those agents most likely to be used in a weaponized form. The following article on anthrax is the first in this series.

Bioterrorism Update: Anthrax

Jennifer Blackmon, B.S.N.

Division of Notifiable Disease /Immunization Promotion

The events of recent months have dramatically changed our way of life in the United States. Certainly, our healthcare system has been affected. Three months ago, most people had never heard of anthrax and few gave much thought to smallpox. Now, these are common topics of conversation for persons from all walks of life. Healthcare providers are being deluged with questions from concerned patients. Many are requesting to be tested for anthrax. Anthrax hoaxes have become almost commonplace. Dealing with this situation effectively will require an effort from a variety of sources including the Health Department, primary care physicians, emergency room personnel, mental health professionals, and emergency responders.



Jennifer Blackmon, B.S.N.
Division of Notifiable Disease /Immunization
Promotion

Our first priority must be to educate ourselves about the biologic agents most likely to be used against us in a terrorist attack. Simply relaying accurate information can allay many patients' fears. It also helps patients to hear the same information from more than one source.

Historical Significance

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The name anthrax comes from the Greek word *anthrakis*, which means coal, because the most common form of the disease causes dramatic coal-black skin lesions.¹ *Bacillus anthracis*, the causative agent of anthrax, was the first microorganism to be scientifically proven to cause a specific disease. It was in 1876 that Robert Koch grew the bacteria in culture and produced experimental anthrax by injecting it into animals. Five years later, Louis Pasteur developed a vaccine for anthrax, the first live virus vaccine that actually worked.² Anthrax is primarily a disease of livestock, with cattle, horses, sheep, and goats most commonly affected through grazing on contaminated land. Natural human illness occurs through exposure to infected animals or animal products.

Certain characteristics of anthrax bacteria make it a particularly good choice for weaponization. The bacteria are easy to grow and readily form spores that are resistant to sunlight, heat, and disinfectants. Moreover, *B. anthracis* is commonly used in laboratory settings and, therefore, may be easier to obtain than other possible agents.

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Anthrax has been used as a weapon for decades. In 1997, viable anthrax spores were found in a German weapon from World War I.³ The United States first weaponized anthrax in the 1950's and 1960's. President Nixon issued an executive order banning biological weapons research in 1969 and U.S. stockpiles were destroyed. In 1972, the Biologic Weapons and Toxins Convention was signed by most countries.⁴ This agreement called for the termination of biological weapons research and production. Unfortunately, a number of countries are believed to have continued these activities. The former Soviet Union and Iran, both of whom signed the agreement, have admitted the existence of these programs.

The largest outbreak of inhalational anthrax occurred in 1979 in the former Soviet Union. An accidental aerosol release of anthrax at a military research facility in Sverdlovsk caused illness in animals as far as thirty miles away. People living downwind of the facility began to show symptoms within ten days and many died. The official death count was only 66, but it is believed by some to have been much higher. At the time, these deaths were blamed on ingestion of contaminated meat. However, Russian President Yeltsin acknowledged in 1982 that the incident was caused by the release of aerosolized anthrax spores.³

Epidemiology

Anthrax infection in humans through natural exposure is rare. Of the three types of illness, cutaneous anthrax is the most common. An estimated 2,000 cases occur worldwide each year. In the United States, there were 224 cases reported between 1944 and 1994.¹ Those at highest risk are those who work with livestock. Animal immunization programs in this country have been a key factor in controlling the spread of the disease.

Only 18 cases of inhalational anthrax were reported in the U.S. in the 1900's with the last one in 1976. Two cases occurred in laboratory personnel.¹ The majority of patients worked with animals, with those at highest risk being wool sorters in industrial mills. Consequently, this form of illness has long been known as Woolsorter's Disease.

Gastrointestinal anthrax is very rare and occurs primarily in other parts of the world. Cases have been reported in Africa, Asia, and Thailand. Two outbreaks in Thailand in the 1980's affected 38 people.¹

Clinical Features

Cutaneous infection occurs when the bacterium is introduced into open cuts or sores on the skin. The first symptom is a painless lesion which progresses from a blister to necrosis and, finally, to eschar formation. The initial lesion occurs 1 to 5 days after exposure and is accompanied by regional edema. Lymphadenopathy appears within 7 days. Cutaneous anthrax responds well to antibiotics and fatal cases are rare among patients who are treated. Left untreated, however, the death rate is approximately 20-25%.³

Inhalational anthrax is more serious than cutaneous. The incubation period is determined by the number of spores inhaled. In the majority of cases, symptoms begin 1 to 6 days following exposure and initially include fever, body aches, dyspnea, cough, and fatigue. Some patients experience a short improvement following this first vague stage of illness. Others progress directly to the second stage that is

characterized by sudden fever, dyspnea, diaphoresis, cyanosis, tachycardia, tachypnea, and shock. Hemorrhagic meningitis occurs in approximately 50% of cases. Death can occur in 2 to 5 days. The mortality rate has historically been 100%.⁴ However, most cases occurred prior to major advancements in medicine, some even before the development of antibiotics. It is reasonable to expect that mortality rates will be lower at this time.

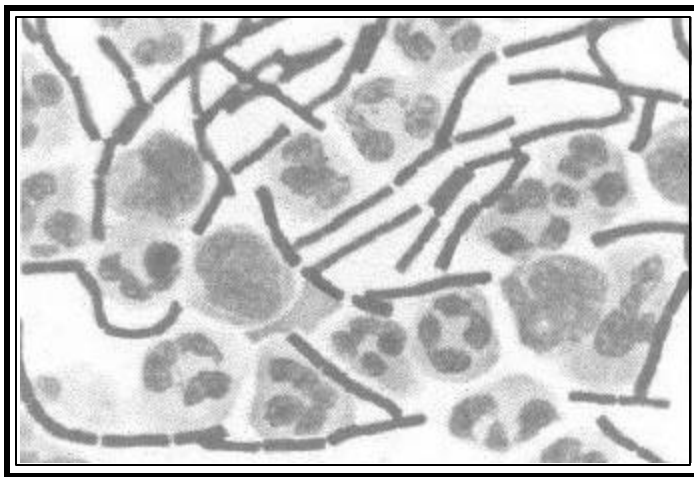


Figure 1: Gram stain of cerebrospinal fluid showing *B. anthracis*⁶

Gastrointestinal anthrax is caused by the ingestion of contaminated meat and occurs in two distinct forms. The more common abdominal form is characterized by fever, nausea and vomiting, abdominal pain and distension, and bloody diarrhea. In some cases, toxemia, ascites, and shock occur. Symptoms of the oral-pharyngeal form of illness include an oral or esophageal ulcer, fever, edema, and regional lymphadenopathy. The fatality rate is approximately 50%.⁵

Transmission

Exposure to anthrax occurs only when a person comes into direct contact with either the spores or the bacteria. Drainage from a cutaneous lesion might spread the disease if it were exposed to non-intact skin or a mucous membrane. This is an unlikely route of transmission.

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...There have been no documented cases of any form of anthrax illness in Tennessee for at least the past thirty years...

Transmission of inhalational anthrax is not entirely understood. In order for an inhalational exposure to occur, anthrax spores must be aerosolized. For instance, in some postal facilities letters go through high-speed mail sorters that are in turn cleaned by high pressure air blowers. It is possible that this equipment caused spores to become airborne in New York and Washington, D.C. It is believed that spores in a ventilation system can also cause inhalational exposure.

There are no known cases of person to person transmission of any form of anthrax.¹ Standard precautions are recommended for healthcare providers and close contacts, and the patient need not be isolated. However, following an invasive procedure, any instruments used should be cleaned with a sporicidal agent.

Cases Year To Date 2001

In October and November of this year, eleven cases of inhalational anthrax were identified in the United States. These cases are unique in that they are the first cases known to be caused by intentional exposure to anthrax. Of the eleven, nine were known or strongly believed to have had contact with letters containing *B. anthracis*.⁶ The mode of exposure in the last two cases is unknown. Cases have occurred in Florida, New York, New Jersey, Washington, DC, and Connecticut. Six patients survived and have fully recovered; five have died.

Twelve cases of cutaneous anthrax were confirmed in this same period of time.⁷ Exposure to anthrax contaminated letters has been documented in each case, and all victims have fully recovered.

Anthrax in Tennessee

There have been no documented cases of any form of anthrax illness in Tennessee for at least the past thirty years. In recent years, Nashville/Davidson County has experienced one or two hoaxes per year. In the last two months, that number has increased sharply. Since the first case of inhalational anthrax was diagnosed in Florida, there have been over 500 calls regarding suspicious powder. This number does not include reports made in other Tennessee counties. In some cases, the powder is accompanied by an actual threat. However, many are instances in which a person reacts to a harmless substance. There have been reports of white powder in a bakery. Salt and pepper shakers have

been tested. Every complaint has been investigated and each powder has been tested. All results throughout the state have been negative.

In an effort to assess the threat posed by contaminated letters sent through the mail, the Centers for Disease Control and Prevention (CDC) recently authorized environmental testing for 500 postal facilities throughout the country. The main distribution center in Nashville and two in Memphis were among the sites chosen for testing. Final results for the Tennessee facilities are negative.

When to Test

Metro Health Department (MHD) has received numerous calls requesting anthrax testing. MHD is not collecting specimens for testing. We will do so only if the presence of anthrax is verified in our county or if a healthcare provider has strong reason to believe a patient has been exposed.

If a patient requests testing, it is important to determine why they are doing so. Some have been involved in an anthrax hoax. All powders from these hoaxes are being tested and Metro Health Department recommends that the patients wait for these results. Preliminary results are available in 24 to 48 hours. If anything is positive, all exposed persons will be notified immediately, tested, and put on prophylaxis. It is absolutely safe to wait this amount of time before initiating prophylaxis.

Some patients are experiencing flu-like symptoms and want to be tested for that reason. A careful interview must be conducted to determine if there has been any possible exposure. Patients must be reassured that they can get the flu even if they have had a flu shot. Some physicians are using Rapid Flu Tests to obtain a quick diagnosis. The primary care provider is in the best position to deal with and put to rest unfounded fears. If a patient is insistent, testing can be done in a private lab.

Nasal swabs are not recommended as a diagnostic test.⁸ These are used primarily for gathering epidemiological information. Blood cultures and Gram stain of the blood (Figure 1) are alternatives for inhalational anthrax. Testing must be done before starting antibiotic therapy. Some patients who tested positive on cultures before treatment had negative cultures as early as 24 hours after starting antibiotics. An abnormal chest X-ray (Figure 2) is also indicative of inha-

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lational anthrax.⁶ Cutaneous anthrax is diagnosed by Gram stain and culture of the lesion. If these are positive, a punch biopsy is sent to CDC for further testing.

Prophylaxis and Treatment

Prophylaxis should only be used to prevent cases of inhalational anthrax. It is not recommended for those who have had a possible cutaneous exposure. These patients should be monitored for signs and symptoms. If a patient has been exposed to a known or suspected contaminated air space, the patient should be started on prophylaxis. If subsequent testing of the possible source is negative, antibiotics can be discontinued. Prophylaxis should continue for 60 days if it is indicated.⁸

A number of antibiotics are effective against anthrax. They include Cipro and doxycycline. Each of these is effective against anthrax.⁹ Overuse of any antibiotic can lead to antimicrobial resistance. Because many organisms are already resistant to doxycycline, its use for post-exposure prophylaxis **against *B. anthracis*** is appropriate and could help to ensure the continued effectiveness of Cipro. Cipro is effective against a number of organisms and widespread use could lead to resistance in some.

Anthrax Vaccine

A six-dose vaccine series is used in the United States. However, due to the rarity of illness historically, vaccination of humans has never been a top priority in our country. It is required for all military personnel. There is some data to show that the vaccine is effective against cutaneous anthrax in humans. Its effectiveness against inhalational anthrax in humans is unclear, although studies show it to be effective in monkeys.¹ Vaccine supplies are limited, and it is not available to the general public.

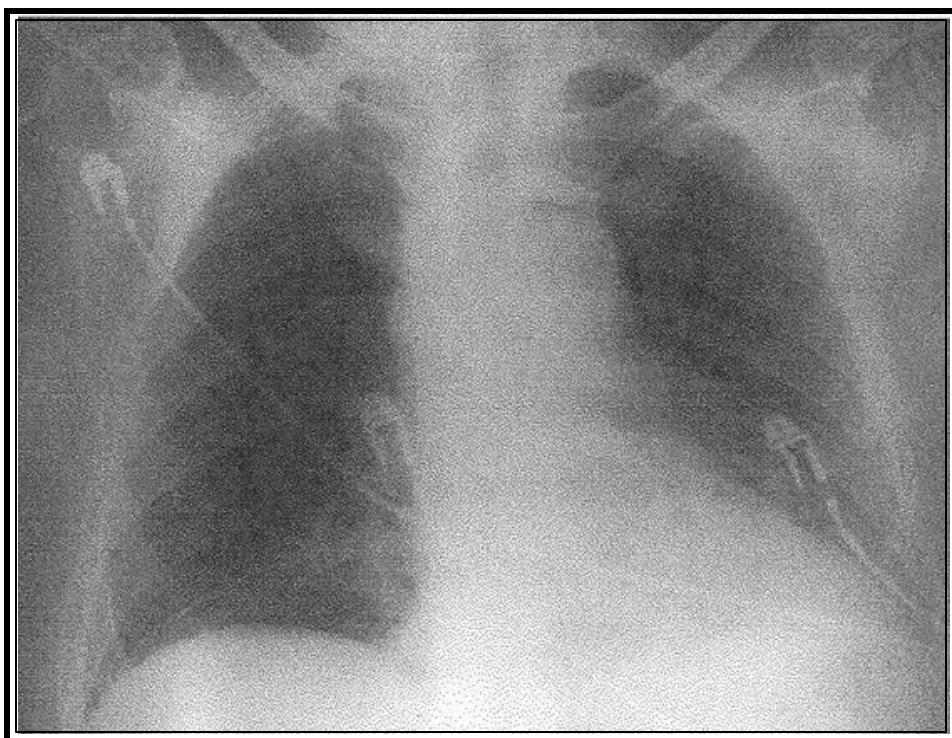


Figure 2: Chest X-ray of inhalational anthrax patient showing prominent superior mediastinum and possible small left pleural effusion.⁶

Summary

Each day we learn more about anthrax infection. Things we thought were true three months ago have been proven false. It has been a painful lesson for our country and there is still a great deal to learn. To deal with the current threat of intentional anthrax exposure we must stay abreast of rapidly changing information. We at Metro Health Dept are committed to doing so in order to protect the public. It is our wish to serve as a resource to anyone who needs information on this subject. If you have questions about anthrax please contact the Division of Notifiable Disease/Immunization Promotion at 615-340-5632. You can also call the CDC Public Response Hotline at 888-246-2675 (English) or 888-246-2857 (Spanish) for more information.

References

- ¹Inglesby, T.V., et al. "Anthrax as a Biological Weapon: Medical and Public Health Management." *JAMA* 281 (1999): 1735-1745.
- ²Friedlander, Arthur M. "Anthrax." In *Medical Aspects of Chemical and Biological Warfare*. Washington DC: Office of the Surgeon General, 1997.
- ³U.S. Army Soldier and Biological Chemical Command. "Anthrax." In *Domestic Preparedness: Defense Against Weapons of Mass Destruction*. Hospital provider course. Version 8.0. Aberdeen Proving Ground, MD. 1999.
- ⁴U.S. Army Medical Research Institute of Infectious Diseases. *Medical Management of Biological Casualties*. Third ed. Fort Detrick, Frederick, MD. 1998.
- ⁵American Academy of Pediatrics. "Anthrax." In *2000 Red Book: Report of the Committee on Infectious Diseases*. 25th ed. Elk Grove Village, IL: American Academy of Pediatrics. 2000.
- ⁶Jernigan, J.A., et al. "Bioterrorism-related Inhalational Anthrax: The First Ten Cases Reported in the United States." *Emerging Infectious Diseases* November/December 2001; Vol7/No6/933-944.

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Editor's Note: Periodically, *Public Health Watch* may present pieces written by Metropolitan Health Department employees that describe their daily work activities and the impact that this work has on the Nashville community.

Love It and Live It or Leave It Alone!

Raymond L. Martinez, Disease Intervention Specialist, STD/HIV

The phone starts ringing at 8:30 in the morning. Tired from a long, fun-filled, bachelor type weekend, this individual has decided to call in sick on this particular Monday morning. "Is it my boss?" thought this young man. Who could it be? Upon looking at the caller I.D., the individual notices that it is the Metropolitan Government. Not knowing which branch, the young man decides to answer the phone.

"Hello," says the young man.

"Hello, is this John Smith?" I ask.

"Yes it is. Who's calling?" John asks.

"Mr. Smith, my name is Raymond Martinez and I'm a Disease Intervention Specialist (DIS) with the Metro Health Department. To verify whom I am speaking with, may I please have your date of birth and Social Security number?" Upon verification, the conversation continues. "Mr. Smith, I am calling you this morning because you have been a contact to syphilis."

"Say what!" screams Mr. Smith, and so the story goes on.

This is typically how the day starts out for the DIS here at the Metro Health Department. While our phones never stop ringing, our pagers constantly page, and our fingers continuously write up cases, our work is never done. There are many that question what we do and how successful we are at doing it. What do DIS do? We make unlimited phone calls and field visits to patients' homes, and if necessary, we even visit their workplace. We check with neighbors, postmen, friends, and even other family members when trying to locate a patient. We do everything we can, without exposing their particular disease or breaching confidentiality, to notify and obtain treatment for these people with sexually transmitted diseases. Whether the sun is blistering hot, or it's pouring rain, there may even be snow on the ground, DIS are out there doing what they do best.

What some people don't realize is that this is a very dangerous job, and that on any given workday a DIS is putting his/her life on the line. For example, there was one specialist



Raymond Martinez, Disease Intervention Specialist, STD/HIV

who was transporting a patient home. When he approached this particular intersection, out of nowhere came a speeding car. The car ran the light and was very much in the wrong. As the DIS pulled out behind the speeding car, the car sped up, then came to a complete stop. "What's wrong with this guy?" thought the DIS. The driver jumped out of his car with pistol in hand and approached the DIS and patient. The driver raised the pistol to the DIS's head and stated, "You look like you want to kick my ass! Say something and I'll blow your head off." Saying nothing to provoke the driver, the DIS was able to drive off unharmed.

While all stories aren't this threatening, we're also known to be referees, breaking up fights between sex partners, or even defending ourselves when being attacked by angry or disturbed patients. Then there are stories that touch the heart in a very special way. There was a DIS who needed to locate a homeless person because the homeless person had tested positive for HIV. With very little locating information, but a good description, the DIS was successful in locating the individual. What's so special about this situation you might ask. About a year and a half after this incident took place, the DIS was out having dinner one evening. As the DIS was leaving the restaurant, this very same individual approached him. Wearing a baseball cap, eyeglasses, and a fresh shave, the individual said, "How are you?"

"Fine," replied the DIS.

"You probably don't remember me, but a little over a year ago, I was homeless. You found me and informed me that I tested positive for HIV. At first I was stunned, but after lis-

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tening to your speech, I decided that it was time for me to start living. I now have a job, a home, and I even have weekly visits with my daughter, whom I've had no prior relationship with. I've learned to live with HIV, and I've learned to live thanks to you."

We, as Disease Intervention Specialists, take our jobs very seriously. From tracking down teenagers and homeless people or walking through neighborhoods looking for pregnant mothers who've tested positive for a sexually transmitted disease, **our work is never done**. Not everyone in Davidson County may realize the results of our hard work, but we're out there making a difference. While this isn't a top dollar job, it is a job that you'll either, **love it and live it, or leave it alone!** Perhaps we've helped someone in your family, a neighbor, or even a close friend. Maybe we even helped your child. Who knows, indirectly, we may have helped you!

Hepatitis A Surveillance and Control

Jennifer Blackmon, B.S.N., Division of Notifiable Disease/Immunization Promotion

The Division of Notifiable Disease/Immunization Promotion of the Metropolitan Health Department handles the investigation of all cases of viral hepatitis reported in Davidson County. The goal of these investigations is threefold. Our first objective is to identify any contacts that might be at risk for contracting the disease. Second, we track trends in the county in order to recognize a potential outbreak and minimize associated illness. Third, statistical data from reported disease helps us to plan where best to concentrate our time, energy, and financial resources.

Hepatitis A rates in Davidson County have remained roughly the same in recent years. In 1999, 49 confirmed cases of Hepatitis A (HAV) were reported to the Metro Health Dept. In 2000, there was a slight decrease with 44 confirmed cases reported. We have dealt with 40 confirmed cases YTD 2001.

When dealing with a case of Hepatitis A, time is of the essence. This is the only form of viral hepatitis that requires immediate telephonic reporting. In order to effectively treat at risk contacts we must identify them and administer Immune Globulin within two weeks of exposure. By the time test results are available valuable time has often been lost. Immediate reporting by health care providers is crucial in order to treat contacts and prevent further spread of the virus.

There are two blood tests for Hepatitis A. A positive total antibody indicates infection at an unknown time (past or present); a positive IgM indicates an acute, or current, case of HAV. Hepatitis A investigations are initiated only upon receipt of a positive IgM as the symptoms of HAV are so similar to those of Hepatitis B. Symptoms include nausea and vomiting, diarrhea, headache, muscle aches, fatigue, loss of appetite, and jaundice. Patients experience a wide range of symptoms. Some have mild symptoms and may not seek medical care until jaundice occurs. Others experience severe illness of approximately one to two weeks' duration.

Often the Health Department receives test results directly from the lab, possibly before notification of the healthcare provider. For this reason, we never proceed with an investigation before contacting the provider to verify that the patient is aware of the results. Other information that may be requested from the provider includes demographics, race of the patient, symptoms, dates of hospitalization, school or daycare attended if the patient is a child, and occupation.

Contacts considered at risk include household members, sexual contacts, and anyone who has eaten food or drink prepared by the patient while symptomatic. If the patient is employed as a foodhandler, the case presents a greater challenge. A thorough interview must be conducted to determine if patrons of a food establishment may have been exposed. If a foodhandler has worked while symptomatic or has poor hygiene practices, a public announcement is called for. This is a rare occurrence. In October, 2001, however, there were two instances of Hepatitis A in foodhandlers requiring a public service announcement. Consequently, over 1,000 people were treated for potential exposure to HAV.

The key to effective treatment of contacts is immediate reporting of acute cases. If a healthcare provider suspects HAV in a foodhandler, it is advised that they contact the Health Department even before receiving final test results. It is also helpful for providers to inform patients that the Health Department will contact them if they test positive.

Managing a potential outbreak successfully requires the combined efforts of health care providers and state and local health departments. Anyone seeking further information regarding Hepatitis A reporting may contact the Division of Notifiable Disease/Immunization Promotion at 340-5632.



Bioterrorism Update: Anthrax....continued from page four

⁷Centers for Disease Control and Prevention. "Update: Investigation of Bioterrorism-related Anthrax and Adverse Events from Antimicrobial Prophylaxis." Morbidity and Mortality Weekly Report. November 9, 2001/Vol.50/973-976.

⁸Centers for Disease Control and Prevention. "Notice to Readers: Interim Guidelines for Investigation of and Response to *Bacillus Anthracis* Exposures." Morbidity and Mortality Weekly Report. November 9, 2001/Vol.50/987-990.

⁹Centers for Disease Control and Prevention. "Official CDC Health Advisory: Use of Ciprofloxacin or Doxycycline for Postexposure Prophylaxis for Prevention of Inhalational Anthrax." Health Alert 10-31-01, #1. CDCHAN-00049-01-31-ADV-N.

*Coming in the January/
February 2002 issue of
Public Health Watch:
Bioterrorism Update:
Smallpox*

Reported cases of selected notifiable diseases for September/October 2001

Disease	Cases Reported in September/October		Cumulative Cases Reported through October	
	2000	2001	2000	2001
AIDS	53	33	348	174
Campylobacteriosis	11	6	38	35
Chlamydia	334	329	2,007	1,757
DRSP (Invasive drug-resistant <i>Streptococcus pneumoniae</i>)	6	1	35	19
<i>Escherichia coli</i> 0157:H7	1	0	6	4
Giardiasis	2	1	22	19
Gonorrhea	381	244	2,028	1,403
Hepatitis A	1	9	37	37
Hepatitis B (acute)	6	0	38	13
Hepatitis B (perinatal)	1	0	20	12
HIV	77	53	405	278
Influenza-like Illness	0	0	722	131
<i>Neisseria meningitidis</i> disease	0	0	7	7
Salmonellosis	12	5	71	46
Shigellosis	1	1	16	7
Syphilis (primary and secondary)	33	11	158	74
Tuberculosis	6	12	64	57
VRE (Vancomycin-resistant enterococci)	6	5	50	48

To report a notifiable disease, please contact:

Sexually transmitted diseases: Pat Petty at 340-5647

Tuberculosis: Diane Schmitt at 340-5650

AIDS/HIV: Mary Angel-Beckner at 340-5330

Hepatitis C: Jennifer Blackmon at 340-5671

Hepatitis B: Cherese Brooks at 340-2168

Vaccine-preventable diseases: Denise Stratz at 340-2174

All other notifiable diseases: Pam Trotter at 340-5632

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